

**AMENDMENTS****In the Specification****BRIEF DESCRIPTION OF THE DRAWINGS**

[0011a] The invention can be better understood with reference to the following detailed description together with the appended illustrative drawings in which like elements are numbered the same:

[0011b] Figure 1A depicts an embodiment of an analytical instrument of this invention; and

[0011c] Figure 1B depicts another embodiment of an analytical instrument of this invention.

[0012a] Referring now of Figure 1A, an embodiment of an analytical instrument of this invention, generally 100, is shown to include an excitation source 102 adapted to produce an incident waveform such as a sonic waveform or an electromagnetic waveform which is directed into an object or volume 104 to be analyzed. The instrument 100 also includes a detector 106 having a reflectance detection component 108 and a transmission detection component 110, where the reflectance detection component 108 is adapted to detect a reflectance spectrum and the transmission detection component 110 is adapted to detect a transmission spectrum. The detector components 108 and 110 are connected to a processing unit 112 via wires 114 and 116, where the processing unit 112 includes software encoding the methods of this invention.

[0013a] Referring now of Figure 1B, another embodiment of an analytical instrument of this invention, generally 150, is shown to include an sonic excitation source 152 adapted to produce an incident sonic waveform and an electromagnetic excitation source 154 adapted to produce an incident electromagnetic waveform, which are directed into an object or volume 156 to be analyzed. The instrument 150 also includes a detector 158 having a reflectance detection component 160 and a transmission detection component 162, where the reflectance detection component 160 is adapted to detect a reflectance spectrum and the transmission detection component 162 is adapted to detect a transmission spectrum. The detector components 160 and 162 are connected to a processing unit 164 via wires 166 and 168, where the processing unit 164 includes software encoding the methods of this invention.